



The Safety Corner

From the Marine Corps Center for Lessons Learned
November 15, 2006



Hearing Protection

This issue of the Safety Corner highlights lessons and observations about the importance of Hearing Protection in order to maintain effective Command and Control.

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From the Director:

Marines will never by choice enter battle without their weapons. Nor would they choose to leave behind their ammunition. In making choices about what to carry into combat, priority has always been to first bring what *enables, extends, or preserves* their ability to "Shoot, move, and communicate." Using these criteria, Marines have strived to load their packs for over two centuries with the lightest, most durable, most "Marine proof" equipment money could buy – oftentimes, their own money. The basic TTPs of communications at the lowest tactical levels have not been advanced significantly beyond WWI capabilities. Verbal communications and hand and arm signals within the fire team and squad remain the primary means of communicating tactical orders and information on the battlefield.

Marines in combat must use all of their senses to survive and perform on the modern battlefield. "*Can you hear me now?*" is a fictionalized composite of the experiences of a typical squad in the battle for Fallujah. It is descriptive of the challenges small unit leaders face in exercising command and control in an urban combat environment. While the detailed events described in "*Can you hear me now?*" represent only the potential risks involved, there are indications that circumstances similar to those described likely did occur. What is certain is that the known cases of Noise Induced Hearing Loss (NIHL) in the Marine Corps are climbing rapidly. The direct contributing factor to this rise in NIHL is increased exposure to noise hazardous environments both in routine daily activities and in the conduct of combat operations.

I wear my hearing protection mowing the yard, flying, and when in noisy environments. I recommend you do the same.

I look forward to your comments, observations, and concerns.

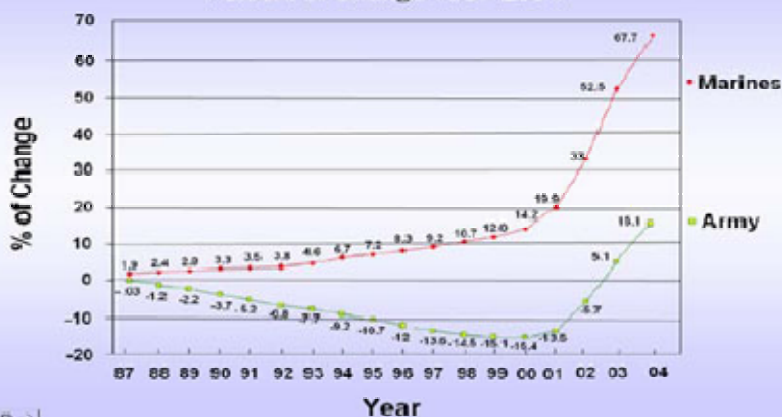
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Hearing

Hearing is often essential to detect, locate, and recognize the enemy. Studies have established that more information is communicated about enemy weapons systems from their sound than visually seeing them. The ability to distinguish the sounds of different weapons, both friendly and enemy, is a skill that can be learned.

If the sounds of weapons fire are coming from the next block of buildings, knowing whether it is enemy or friendly, small arms or automatic weapons, low caliber or larger caliber, or whether it is an RPG or an antitank weapon can be critical information that determines a Marine's reaction.

Army/Marine VA Hearing Loss Disability Cases
Percent of Change 1987-2004





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"Can you hear me now?"

Sergeant Jackson^[1] was ready. This would be his first time in urban combat, but his training, focus and sheer determination resulted in a confident and capable leader of Marines. His Marines were ready, too...or so he thought.

As his squad manned the up-armored HMMWVs to provide rear convoy security, Sergeant Jackson chuckled at the thought of his squad of ground-pounders riding in style. He had ridden in more tactical vehicles in the past 5 months than in his previous 5 years.

As they headed into the night, the noise inside the HMMWV became deafening. He shouted instructions to the driver and the gunner, trying to exercise some control over his small, but critical, piece of this operation. He didn't worry much about his shouts carrying beyond the convoy. The noise of the engines had probably become routine along this route – just one more American convoy. But Sergeant Jackson knew that this one was special.



The trip took nearly three hours. The squad unloaded into a hasty defense on the western edge of the assembly area. There was a sense of relief to be free from the noisy, cramped vehicles.

The assembly area was far enough away to provide some security, but there was still a sense that the enemy was near. Leaders gave commands in hushed voices and hand and arm signals, though the darkness limited their effectiveness. Sergeant Jackson signaled to nearby team leaders. They relayed commands left and right a long the perimeter. A forward air control (FAC) team arrived and took up a position as he was giving instructions to his first fire team leader. The FAC wasn't in place five

minutes when he approached Sergeant Jackson and told him to keep his voice down. Jackson guessed the enemy positions must be closer than he thought. His commands now became whispers. To control his squad, he finally had to move from team leader to team leader explaining what he wanted them to do. After what seemed hours, the command finally came to move out.

As they reached the outskirts of the city, things seemed quiet. Ahead was his first objective. It was a tall building that would provide overwatch of the surrounding neighborhood. It would also allow his platoon leader to maintain communications as the units moved up their building lanes. He signaled the breaching team forward. The rest of the squad took up position to rapidly enter the building after the breach. Speed, surprise, and shock effect were the goals.

After the breach, the stack entered the first room, to establish a foothold to continue the clearing operation. There was nothing there. It was abandoned, except for some worn furniture and scattered debris. It appeared that someone had been there earlier.



He motioned one of his teams to begin the systematic, tedious, and tiring process of clearing the building, room by room. They moved quietly and deliberately, but quickly. Their training was paying off. As the squad approached the western corner of the building, near the ladderwell to the second floor, all hell broke loose. Corporal Duggan's team surprised several insurgents trying to escape. His point man, Lance Corporal Trent, and the SAW gunner, Lance Corporal Burke, caught the enemy mid-stride with bursts from their weapons. A grenade thrown into the room at the base of the ladderwell finished off the last two insurgents.

^[1] Sergeant Jackson and the other Marines named in this article are fictitious composites of Marine small unit leaders in combat. The events in this article are a fictionalized account of small unit operations in urban combat and any similarities to real or actual circumstances, events, or people during Operation Iraqi Freedom are purely coincidental.



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But now there was a problem – one so subtle that no one realized it. The small arms fire in the enclosed space and the noise from the fragmentation grenade had caused casualties besides the dead insurgents – friendly casualties. These casualties were walking wounded – *in fact their injury seemed so minor that they didn't even know they were casualties.* In some respects this made them even more dangerous to themselves and others in the squad. All of 1st Squad was injured and the medical term for their injuries was NIHL – Noise Induced Hearing Loss.

Some Marines were injured more severely than others. They couldn't clearly understand commands from Sergeant Jackson, even when he shouted. The ringing in their ears effectively made them a liability. They were unable to detect the subtle sounds of combat. They couldn't hear the muffled footfall of an escaping insurgent, the metallic sound of sling keepers tapping weapon stocks, the heavy breathing and hushed, tense prayers of insurgents hiding and waiting to take their lives.

Probably most of 1st Squad actually sustained their hearing injuries long before the first violent encounter with the enemy. Their long, high-speed ride in the HMMWV had already affected their hearing. When the FAC told Sergeant Jackson to pipe down back in the assembly area, it was probably because the squad leader's hearing was impaired and he didn't realize he was speaking louder than necessary in giving his commands. Even then his Marines had trouble understanding his commands – it sounded like he was mumbling.

Effective command, control, and communications (C3), especially at the small unit level, depend a lot on voice commands. Studies have shown that the ability of a unit to accomplish its mission is directly linked to its ability to effectively communicate. If communications effectiveness drops by 30%, the ability to control the unit drops by 30%. In combat, this is magnified by the chaotic environment, the complex problems encountered, and the need for fast reactions. It is also complicated by the loud, damaging sounds of urban combat, and their echoes against hard structures along narrow streets and inside buildings.

When that first burst of small arms fire took out two insurgents, Sergeant Jackson's lead team took casualties, too. When the FRAG grenade eliminated two more enemy, it also degraded Sergeant Jackson's C3 for the next few hours. They went from C3 to C-Zero in an instant.

Sergeant Jackson automatically compensated by yelling louder and using hand and arm signals. But the squad never fully recovered from the effects of the first engagement. Every room by room fight, every breaching explosion, every tank main gun blasting a hole in a wall, all the Javelin and TOW shots, and the thousands of rounds of machinegun fire only caused further damage – on 1st Squad, as well as the enemy.

Sergeant Jackson overlooked one important TTP as he prepared his Marines for combat, for the convoy movement, for actions in the assembly area, and for crossing the LOD. They checked their ammo and magazines, deuce gear, SAPI plates, hydration systems, helmets, ballistic sunglasses; even elbow and knee pads... but they left their "ear armor" home.

1st Squad had been at it hard all day. They were running on adrenalin, not yet overcome by the weariness that would come later when they finally consolidated their position. As Corporal Duggan rounded a corner and stepped through a doorway, he encountered a strangely threatening scene. The door opened onto an inner courtyard. There in the dusty, littered square were more than half a dozen insurgents eating a meal, weapons by their sides.

Corporal Duggan could only react instinctively to the threat. The insurgent in the far left corner of the courtyard raised his head and reached for his weapon. Corporal Duggan raised his weapon first and let out a burst that rocked his target backwards. "GET BACK!...GET BACK!!" Duggan yelled over his shoulder as he fired again. He dropped down and tried to find cover behind the nearby wall.





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Duggan reeled from his exposed position in the doorway and reached for a grenade. He felt something brush against his right shoulder. It was Lance Corporal Burke, charging through the doorway. Duggan watched in disbelief and confusion. Burke moved through the doorway and into the courtyard. He was spraying his targets with devastating fire. In the split seconds from the time that Burke thought he heard his team leader yell "ATTACK!...ATTACK!" and the time he charged the door, five enemy had picked up their weapons. Now they were firing automatic weapons at their target, a lone Marine charging through the narrow door and into the courtyard.

The engagement only lasted seconds, but for Corporal Duggan it was an eternity. As the echoes of gunfire died away, he could hear the sounds of agony and dying men from the courtyard.

Corporal Duggan frantically waved the rest of his team back as they tried to follow Burke through the doorway. After a quick brief on his plan, Duggan and his Marines formed a stack. Using their last stun grenade, they entered the courtyard, filling the space with small arms fire. Three insurgents were still fighting. As Duggan stepped over Burke's body, one of the insurgents sprayed the room blindly. He hit Duggan in the thigh and above his left elbow. In seconds, it was over. Two Marines – one dead, one seriously wounded – were out of the fight. And it was because of avoidable hearing loss and miscommunication.

This is a fictional account used to highlight the possible effects of noise induced hearing loss.

Hearing Protection

Hearing protection is usually taught as a safety or medical issue. Marine combat leaders must recognize that preserving their ability to exercise command, control, and communications (C3) is a tactical issue. It has a direct impact on success in combat. That's why hearing TTPs need to be developed, trained to, and rehearsed to preserve C3.

The Marine Corps Center for Lessons Learned (MCCLL) has received reports of both temporary and permanent hearing damage due to exposure to combat noise. Some of these injuries are due to enemy actions. Many are the result of normal activities in garrison or during combat operations without appropriate hearing protection. Efforts to examine the problem of NIHL in the U.S. military go back almost a century. On 20 February 1918, Major C.W. Richardson wrote an Office Memorandum to the Surgeon General entitled "Ear Protectors for the Benefit of the Soldiers in Actual Conflict."

But wearing hearing protection was not made mandatory until 1980 with the publication of DoD Instruction 6055.12. Small unit leaders like Sergeant Jackson don't normally have DoD Instructions on their professional reading list—nor should they. After nearly a century, the time has come for Marine leaders to foster a better understanding of the impact of NIHL on C3 and on combat effectiveness. For too long, Marines have accepted NIHL as an "occupational hazard" or the cost of doing business.

Combat Arms Earplug

The Combat Arms Earplug (CAEP) is the hearing protection equipment currently fielded by the Marine Corps. This is not your ordinary earplug. Marines can hear normal combat sounds when the CAEP is worn "green side out." The CAEP shuts out damaging sound levels, such as weapons fire or explosions. This preserves the Marine's ability to hear and communicate. Casualties wearing the CAEP have reported they can still hear after IED attacks.

The CAEP is "reversible." It can provide protection against continuous noise hazards, such as a HMMWV traveling at speed or being near generators. Flip the CAEP so it is "green side in" and it works like the "traditional" earplug, providing protection against constant damaging noises.

"GREEN SIDE OUT (combat)" and "GREEN SIDE IN (noise)" TTPs should be developed and enforced for all environments. This will ensure that Marines can maintain communications once combat begins.



Most Marines believe that the best defense is a good offense. It's time for the Marine Corps to go on the offense with noise on the battlefield. Sound and hearing can, and should, be turned into a combat multiplier.

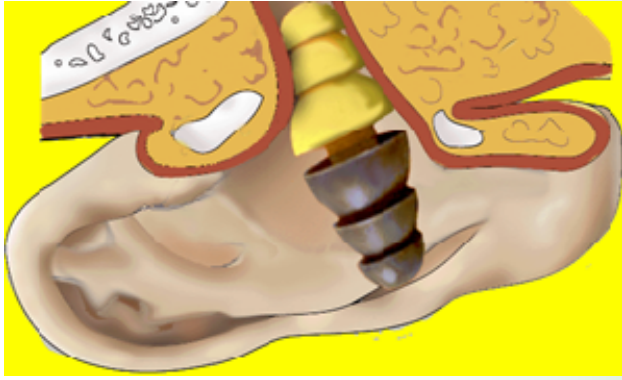


COMBAT EARPLUGS

- Green Side
Out for weapon
fire and in
combat



A special filter
allows speech but
activates for
weapon fire



- Insert Green
Side In for
continuous noise
hazards



noisy vehicles,
generators
aircraft,
watercraft etc.



- Keep filter holes free of earwax and other debris.
- Check proper insertion for slight tension by gently tugging on plugs.
- Ensure that plugs are cleaned with soap and water and dry whenever returned to case.